



INSPECTION REPORT  
OF THE  
**CITY OF JACKSON – MADDOX ROAD PUBLIC WATER SYSTEM**  
**JACKSON, MISSISSIPPI**

By  
**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 4**  
**ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION**  
**WATER ENFORCEMENT BRANCH**  
**DRINKING WATER ENFORCEMENT SECTION**

July 29, 2022

## **Introduction**

A Drinking Water inspection to evaluate compliance with the Safe Drinking Water Act (SDWA) was performed at the City of Jackson (COJ) – Maddox Road Public Water System (System), PWS ID: MS0250012 in Jackson, Mississippi on June 30, 2022. The inspection was conducted under the authority of Section 1445(b)(1) of the Safe Drinking Water Act.

An entrance briefing was held on June 30, 2022, where U.S. Environmental Protection Agency (EPA) inspectors presented their credentials and discussed the sources and treatment operated by the system. Personnel from Mississippi Department of Health (MSDH) were also present at the time of the inspection. Following the briefing EPA, MSDH, and System staff visited each well and storage tank in the ground water system. A closing meeting was held at Jackson City Hall where a preliminary list of observations was presented to City officials and system staff.

## **Purpose**

In FY20, the EPA began a National Compliance Initiative (NCI) with the goal of reducing noncompliance with drinking water standards at community water systems. One of the goals of the NCI is to support the Agency's Strategic Plan, which calls for a 25 percent reduction in the number of community water systems that are out of compliance with health-based standards by the end of FY 2022.

EPA has also been directed to take immediate and affirmative steps to incorporate environmental justice considerations into their work. As such, EPA has taken steps to recognize and prioritize systems that serve previously underserved populations. City of Jackson – Maddox Road PWS was identified as a candidate for inspection based on this directive.

## **Participants**

City of Jackson - Maddox Road Public Water System:

Terence Byrd – Water Plant Operations Supervisor, J.H. Fewell Water Treatment Plant  
James Perry – Maintenance Supervisor, J.H. Fewell Water Treatment Plant

Mississippi Department of Health:

Amy McLeod – Regional Engineer

EPA:

Charlotte Bunch – Enforcement Officer  
Whitney Lehrer – Enforcement Officer

## **System Description**

The System supplies ground water to the City of Jackson. Operated in conjunction with the City's surface water system, the System feeds the Byram and South Jackson areas of the City. As provided by the Safe Drinking Water Information System Federal Reporting Services

(SDWIS-Fed,) the System supplies water to a population of 16,555 via 5,762 service connections. The system has a total of seven wells, with six in service and one abandoned at the time of inspection. The six wells feed three above ground storage tanks with a total of 5.75 million gallons of finished water storage capacity.

The surface and ground water systems were requested to be merged in October of 2014 in an effort to convert the entire system to surface water. In March of 2016 the systems were requested to be unmerged as the City faced difficulty executing this plan. The goal of having the system run completely on surface water still exists, with the wells serving as a backup source of water.

The pump test results from April 2021 show a total well pump capacity of 4,243 gallons per minute (gpm). Wells currently operate for 24 hours a day with only some of the wells equipped for remote start up and shut down. The well system is staffed by one staff member, with additional staff from the J.H. Fewell Water Treatment Plant cross-trained to take on ground water system responsibilities.

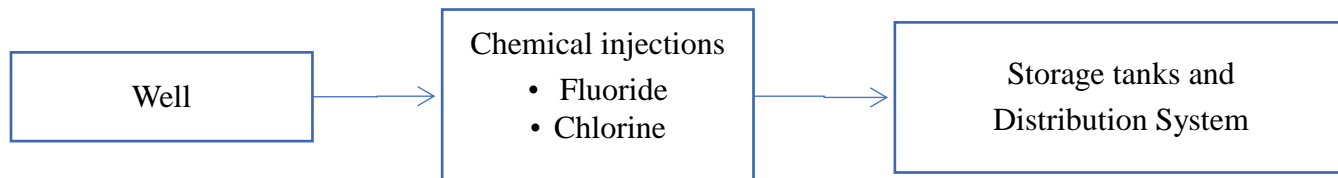
A System staff member visits the well sites on a schedule of three times a week: Monday, Wednesday, and Friday. System staff also visits sites after a heavy storm or loss in tank levels. At each visit, staff checks the site for signs of damage, checks chemical equipment, and records well equipment readings. The following information is recorded in a logbook: well intake pressure, flow rate, chlorine used per day (lbs/day), chlorine booster pump pressure, number of spare chlorine cylinders, and number of spare bags of fluoride. A chlorine and fluoride residual are taken at the first customer from treatment.

Chlorine cylinders are secured in the upright position. Three cylinders are stored per bank, with each well house having an online, offline, and reserve bank. Tanks are manually changed over by one person. Staff carry a self-contained breathing apparatus and ammonia in their truck in the event of a chlorine leak.

Prior to the attempt to switch from ground water to surface water, the well houses were set up for remote monitoring. Well houses were equipped with chlorine analyzers, intrusion alarms, pump status indicators, and flow shut off detection, which are not currently in operable condition. System staff mentioned that new equipment and wiring is needed to restore these capabilities.

Fluoride is mixed by sight measurements and kept in a drum in an adjoining room to the chlorine. An automatic pump feeds fluoride to the system.

The treatment of water at each well is as follows:



Finished water is stored in three storage tanks. Two of the tanks are ground storage tanks, with capacities of 3,000,000 and 2,500,000 gallons. The third is an elevated storage tank with capacity of 250,000 gallons. Tank inspections are scheduled along with the surface water system tanks, so that inspections occur every 3-4 years.

EPA inspectors visited the following sections of the PWS:

- TV road well
- Wiggins well
- Maddox well
- Highway 18 well
- Willowood well
- Siwell well
- Cedar Hills tank/abandoned well site
- Highway 18 tank
- Spring Ridge tank

### **Personnel**

Wells are visited three times a week (MWF) by a System's staff member. An additional employee, cross-trained to work at the J.H. Fewell plant, is available to do ground maintenance for the wells.

### **Documentation reviewed**

Prior to the inspection, EPA inspectors reviewed the following documentation:

- Last sanitary survey performed by MSDH
- Violation history
- Enforcement Targeting Tool Score history
- NEIC 2020 Investigation Report – City of Jackson Water System

During the inspection there were no written SOPs for EPA inspectors to review.

### **Closing Conference Participants**

City of Jackson:

Marlin King – Director of Public Works  
Mary Carter – Deputy Director of Water Operations  
Robert Lee – Interim City Engineer  
Terry Williamson – Legal Counsel  
Terence Byrd – Water Plant Operations Supervisor, J.H. Fewell Water Treatment Plant  
James Perry – Maintenance Supervisor, J.H. Fewell Water Treatment Plant

EPA:

Charlotte Bunch – Enforcement Officer  
Whitney Lehrer – Enforcement Officer

## **Comments and Observations**

### **Comments**

System staff was welcoming and helpful during the inspection. Good communication was observed among operations staff. The staff was accommodating and efficient at touring EPA inspectors around the sources and distribution system. Attention needs to be given to upgrades and maintenance of the System. Wells run for 24 hours a day and cannot fully supply tank storage. The constant use of the wells is an indicator that the City may not be prepared to rely solely on surface water in the near future; therefore, upkeep of the ground water system is pertinent to ensure the operational lifetime of critical assets.

Proper operations and maintenance of the ground water system requires dedicated staff members that can perform regular duties such as general maintenance, as well as respond in a timely manner to emergency situations. The well sites are monitored three times a week by one operator, which could cause a delay in identifying issues within the groundwater system. Backup staff are being overworked at the J.H. Fewell surface water plant and do not appear to be a sustainable staffing solution. Currently, the system operates from a reactive standpoint, which adds stress to the system components and staff. Proper staffing of the system could help mitigate these risks and help shift the system to a more proactive approach to maintenance.

Photographs found in Appendix A: Photolog.

### **Findings**

1. **Finding:** No written procedures were available to review for the groundwater system operation.

MSDH Public Water Supply Operations Manual, Capacity Assessment Operational Duties, pg.10 #2 –

*Develop a written set of standard operating procedures (SOP) for the public water system. The public water system should develop these procedures in sufficient detail and routinely update them to identify all activities required to efficiently operate and maintain all components of the water system. The responsible official/management of the public water system should review and approve this set of standard operating procedures. The system should maintain the SOP in the official records of the water system so that it will be available for use by system personnel.*

**Comment:** It is important for SOPs to be developed to provide clear direction for those operating the system. SOPs should be used as a tool to ensure institutional knowledge of the System is not lost or unavailable if staff retires or is unable to work. These SOPs will provide direction, should additional staff from the surface water systems step in to supplement groundwater operations.

2. **Finding:** EPA inspectors found that the following wells were missing well vent screens: TV Road Well (Photograph 1), Highway 18 Well (Photograph 2), Willowood Well (Photograph 3), and Siwell Well (Photograph 4).

MSDH/BPWS Design Criteria, Part III – Wells, H.2.d.

*The casing should be provided with an access pipe which is at least 2 inches in diameter to allow for water level measurements. If this is also used as the casing vent, it must be screened and elbowed.*

**Comment:** The screen prevents insects and other organisms from entering the well. Insects and other organisms are possible vectors for disease and contamination. Following the inspection, COJ staff provided documentation that screens were installed on the TV Road and Willowood well vents (Photograph 5 and 6).

3. **Finding:** The TV Road well was observed to be missing an air relief screen (Photograph 7).  
**Comment:** Following the inspection, COJ staff provided documentation that screens were installed on the TV Road well (Photograph 5).
4. **Finding:** Inspectors observed the ladder of the Spring Ridge tank without appropriate security to prevent trespassing and access to the top of the tank (Photograph 8).

MSDH/BPWS Design Criteria, Part VIII- Safety and Security, A.6.

*All finished wells, treatment facilities, pumping structures, and water storage tanks shall be protected from trespassing, unauthorized access and vandalism. Protection measures may include, but are not limited to: Physical barriers to entrance of ladders.*

**Comments:** Access to storage tank ladders needs to be limited to water treatment personnel to prevent unauthorized access into the finished water storage.

### **Observations**

1. **Observation:** System employs a designated staff member to check the wells three times a week. It was unclear if this employee is a certified operator.

Mississippi Primary Drinking Water Regulations (MPDRWs) Rule 2.1.1.

*Class D. Water systems with no treatment other than chlorination and/or fluoridation or direct chemical feed such as polyphosphate. The certified operator in responsible charge or his/her designee shall be available twenty-four (24) hours per day to address system needs and problems as they occur.*

**Comment:** Appropriate staffing is necessary so that all groundwater assets can be operated and maintained adequately. Due to the complexity and on-the-job-training needed for operating and maintaining the groundwater system, additional staff should be hired to allow for adequate training by current staff and to ensure a certified operator is available 24 hours a day.

2. **Observation:** Chlorine sensors in the well houses were not operational.  
**Comment:** Chlorine sensors will identify if there is excess chlorine in the room and alert the operator to potentially dangerous conditions.

3. **Observation:** It was observed that entry doors into chlorine rooms were equipped with non-functioning intrusion alarms.

MSDH/BPWS Design Criteria, Part VIII- Safety and Security, A.7.

*All finished wells, treatment facilities, pumping structures, and water storage tanks shall be protected from trespassing, unauthorized access and vandalism. Protection measures may include but are not limited to: Provision for ensuring security of the facilities at all times. Incorporation of appropriate intrusion alarms should be provided which can effectively communicate to the operator in charge or system representatives.*

**Comment:** Access to chlorine operation and storage should be monitored to prevent tampering and accidental release.

4. **Observation:** Vegetative growth in the valve box was observed at the Cedar Hills tank (Photograph 9).

**Comment:** It is best practice to keep vegetation growth off water system components to prevent unnecessary wear and tear on the assets. Excessive vegetation can both damage and prevent use of the valves located in the valve box.

5. **Observation:** Threaded hose-bib sample taps were observed next to the Highway 18 (Photograph 10) and Spring Ridge tanks (Photograph 11).

Mississippi Primary Drinking Water Regulations Rule 1.1.2.

*A cross-connection shall mean any direct interconnection between a public water system and a non-public water system or other source which may result in the contamination of the drinking water provided by the public water system. This definition includes any arrangement of piping where a potable water line is connected to non- potable water.*

**Comment:** A threaded hose-bib connected to the water tank provides a potential for a cross-connection. In the event of a cross-connection, significant loss of pressure in the system would allow for contaminants to enter the finished water storage tank. Cross-connections are prohibited in accordance with *Miss. Cod Ann . §41-26-14* and *MPDWRs Rule 1.8.1*.

6. **Observation:** The pipe support underneath the Wiggins well was not connected to the pipe (Photographs 12 and 13).

**Comment:** Proper support of well pipes is important to maximize the longevity of the pipe.

7. **Observation:** The vent hole for the fluoride room was covered at the Siwell well house (Photograph 14).

MSDH Public Water Fluoridation Guidelines IV.C.3

*Vapors from fluorosilicic acid are corrosive; containers should be kept tightly closed, vented to the outdoors, and stored away from hot temperature areas. Bulk storage tanks can be made of fiberglass polyethylene or rubber-lined steel.*

**Comment:** Proper ventilation is important for operator safety by preventing a buildup of harmful fumes in chemical rooms.

8. **Observation:** Fluoride drums were not observed to be double barreled and in the event of a spill, drain straight into the storm drain (Photograph 15).

MSDH Public Water Fluoridation Guidelines IV.C.4

*Fluoride waste should be disposed of in accordance with Mississippi's Environmental Protection Program. Chemical spills should be cleaned immediately.*

**Comment:** Chemical containment will prevent the release of fluoride into the sewer drain.

9. **Observation:** Oil at the Siwell wellhouse is being stored in a reused container originally for another substance.

MSDH Design Criteria III – Wells, 5.b.II

*If oil lubricated, a non-petroleum based product meeting USDA H1 standards should be used.*

**Comment:** Containers should be labeled properly to identify contents to prevent confusion and ensure that only the required oil, as specified by MSDH Design Criteria III.5.b.II, is used.

10. **Observation:** The interior of the well houses showed signs of degradation and lack of maintenance (peeling paint, disintegrating wood, caving in of ceilings, piling of ant beds under doorway). (Photographs 14 and 15).

**Comment:** Interior of the well houses should be kept in good condition to preserve the integrity of the building. The well house provides security to water treatment and water system assets.



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## Appendix A: Photograph Log



**Photograph 1:** TV road well vent



**Photograph 2:** Highway 18 well vent



**Photograph 3:** Willowood well vent



**Photograph 4:** Siwell well vent



**Photograph 5:** Screened TV road well vent and air release



**Photograph 6:** Screened Willowood well vents





**Photograph 7:** Tv road unscreened air relief



**Photograph 8:** Missing ladder cover at Spring Ridge tank



**Photograph 9:** Vegetation in valve box at Cedar Hills tank



**Photograph 10:** Threaded hose tap at Highway 18 tank





**Photograph 11:** Threaded tap at Spring Ridge tank



**Photograph 12:** Detached pipe support



**Photograph 13:** Detached pipe support



**Photograph 14:** Covered ventilation at Siwell wellhouse





**Photograph 15:** Fluoride drum in Willowood wellhouse



**Photograph 16:** Building degradation inside Wiggins wellhouse